

SUPPORT FOR THE AMENDMENTS

Claims 3, 5, and 6 have been canceled.

Claims 1, 2, 4, and 7-19 have been amended.

Claim 20 has been added.

Support for the amendments to the claims are provided at least by original Claims 1-21 of the PCT application, prior to the Article 34 amendments, original Claims 1-19 presented for examination in this application (i.e., the Article 34 amended claims), and the corresponding sections of the specification at page 3, line 21 to page 32, line 13.

No new matter has been added by the present amendments.

REMARKS

Claims 1, 2, 4, and 7-20 are pending in the present application.

The presently claimed invention relates to:

- specific fixation of a target on probes already fixed on active zones of FET (step b) of claim 1) and,
- subsequently, sensitive detection of this target fixation (step c) of claim 1).

To render the fixation of target on probe specific and the detection sensitive, the solution as claimed in claim 1 comprises the steps of performing this fixation in a reaction buffer having a first salt concentration and then performing the detection in a measuring buffer having a second salt concentration that is lower than the first salt concentration.

The present invention uses a change in salt concentration in order to optimize independently step b) of specific interaction and step c) of electronic detection.

Based on the cited art, there it would not be obvious that this idea works. Indeed, as the skilled artisan would appreciate, a specific interaction is difficult in a low concentration salt buffer, it must have thought that the targets will be separated from the probes when the salt concentration is lowered. The present invention takes advantage of the non-trivial and non-obvious observation that once established the probe-target duplex "survives" when the reduction in salt concentration is lowered and can be electronically detected at low salt concentration, i.e. in a regime favorable to the electronic detection where the electrostatic screening is reduced.

According to new claim 1, the measurement is carried out spatially and differentially in a measurement buffer by reference with molecular probes that have not been subjected to a specific interaction. Applicants submit that the claimed invention is not obvious in view of

Lindsay et al, even when viewed together with Price and/or Anderson for the more specific reasons that follow.

The rejections of (a) Claims 1-4, 7, 8, and 14-16 under 35 U.S.C. §102(e) over Lindsay, (b) Claim 17 under 35 U.S.C. §103(a) over Lindsay in view of Price, and (c) Claim 19 under 35 U.S.C. §103(a) over Lindsay in view of Anderson, are respectfully traversed.

Lindsay disclose a backgated FET built on a SOI and an applied drain-source voltage is kept constant. A backgate voltage is grounded, so that the substrate is grounded. See [0036] in particular. In the configuration of Lindsay, it is not possible to fix the potential of the electrolyte. The latter is electrically isolated from the semiconductor structure by an oxide layer and a passivating layer. Electrical connections are provided only to the solid state parts of the device.

This means that the electrolyte potential and in turn the potential of the active regions are floating. Lindsay does not disclose or suggest changing the buffer between the step of interaction and the step of measurement.

Even if in [0032], Lindsay mentions a differential measurement between probe device output 210 and control output 220 and 200 (figure 6), no example of such a differential measurement is given. Accordingly, Lindsay cannot anticipate and/or render obvious the claimed invention.

Price discloses an electronic circuit that pulls the power supply line low in a computer or other electronic system when the computer is turned off so that there is no residual voltage or back feed voltage on the power supply line when the system is turned off.

For this objective, Price describes an electronic circuit comprising FET (MOSFET or JFET) with depleted n-channel, two bias resistors and a current limiting resistor. This circuit

derives a gate bias voltage from a negative voltage source (see column 1 line 65 to column 2, line 3).

The problem solved by the invention claimed in claim 1 is absolutely different from the problem solved in Price. The invention solves the problem of specifically fixing target molecules on probe molecules, and precisely measuring this interaction. Price does not disclose or suggest changing the buffer between the step of interaction and the step of measurement. It does not describe any more spatial and differential measurement between FETs. Thus, Price would not be combined with Lindsay and even if such a combination were to occur the claimed invention would not be obtained.

Anderson relates to a micro fluidic device comprising micro fluidic channels joining chambers. The chambers do not comprise FET. Anderson does not disclose or suggest changing the buffer between the step of interaction and the step of measurement. It does not describe any more spatial and differential measurement between FETs. Thus, Anderson would not be combined with Lindsay and even if such a combination were to occur the claimed invention would not be obtained.

Withdrawal of these grounds of rejection is requested.

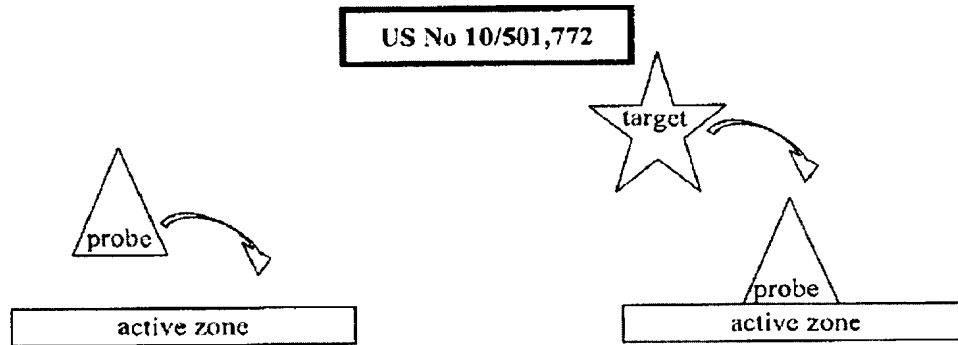
The rejection of Claims 1-4 and 7-19 under 35 U.S.C. §112, second paragraph, are obviated by amendment.

Applicants have amended the claims in a manner in which it is believed has rendered the Examiner's criticisms moot.

Withdrawal of this ground of rejection is requested.

The provisional obviousness-type double patenting rejection over U.S. 10/501,772 is respectfully traversed.

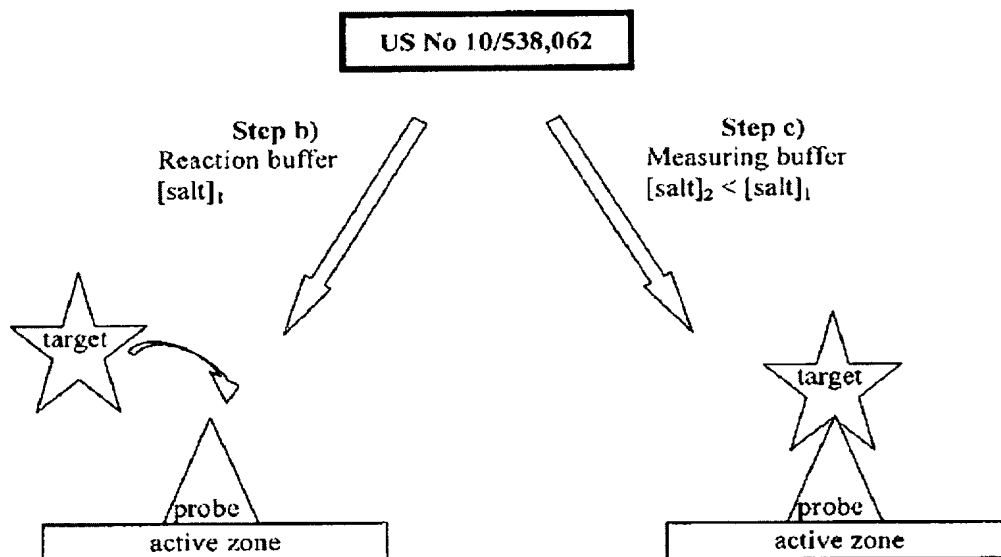
U.S. 10/501,772 relates to the detection of probe fixation on active zones of FET and, then, detection of target fixation on probe. This is illustrated by the following:



In contrast, the presently claimed invention relates to:

- specific fixation of a target on probes already fixed on active zones of FET (step b) of claim 1) and,
- subsequently, sensitive detection of this target fixation (step c) of claim 1).

The present invention is illustrated by the following:



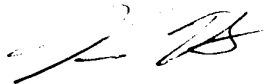
Applicants submit that the claimed subject matter of U.S. 10/501,772 and of the present application are distinct and, therefore, the obviousness-type double patenting rejection is of no merit.

Withdrawal of this ground of rejection is requested.

Applicants submit that the present application is now in condition for allowance, and early notification of such action is earnestly solicited.

Respectfully submitted,

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